Changes in reimbursement policies in California (i.e., selective contracting by Medi-Cal and private insurers) are creating an increasingly competitive operating environment for hospitals. Hospitals located in areas with higher proportions of the indigent population will increasingly be at a competitive disadvantage. Recent attempts by hospitals in downtown Los Angeles to close their emergency rooms suggest that these pressures are already being felt.[3] Although the Medicare prospective payment system program provides extra payments to hospitals serving a disproportionate share of low income patients, this provision is scheduled to be discontinued in 1989. Emerging payment reforms need to recognize and incorporate provisions to ensure that access to medical care is not sacrificed in the effort to contain hospital costs.

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ADDENDUM

Background Information on Closure of Emergency Departments in Los Angeles as of September 1988

In May 1988, a private, not-for-profit hospital in downtown Los Angeles filed an application to "down-license" its emergency room from a full-service department to a standby facility that would no longer accept ambulances (it received approximately 800 ambulance visits per month). Soon afterward, three nearby hospitals filed similar applications, citing the potential increase in indigent patients if ambulances were re-routed to their facilities. Other hospitals have since threatened to follow suit.

As a short run solution, the County Department of Health Services provided $1.81 million in supplemental funding directly to eleven private hospitals that it believes are vital to the emergency services network. In return, the hospitals agreed to keep their emergency rooms open for the period of the contract. The County has agreed to provide an additional $1.25 million for a two-month period, but only on the condition that a statewide Tobacco Tax Initiative passes in the November election.

Of the eleven contracting hospitals, at least three had once been designated trauma centers but had withdrawn from the trauma network in 1987. Nine of the eleven are not-for-profit facilities, and the remaining two are investor-owned. Most are located in inner city areas. Absent a long run solution to the funding problem, the County could face a substantial reduction in the availability of hospital emergency department services.

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Television Viewing and Obesity in Adult Males

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Abstract: We estimated the extent to which time spent watching television is associated with obesity and super-obesity among 6,138 employed adult males. After adjustment for age, smoking status, length of work week, measured physical fitness, and reported weekly hours of exercise, people who viewed TV more than three hours/day were twice as likely to be obese as those who viewed less than 1 hour/day. Those who viewed for 1 to 2 hours daily had a relative risk of 1.60 (1.21, 2.11). Physical fitness consistently confounded the associations between TV viewing and obesity/super-obesity, but the other control variables did not do so. (*Am J Public Health* 1989; 79:516–518.)

Introduction

Television viewing is the most pervasive pastime in the United States today. Following sleep and work, it is the nation's third most time-consuming activity.[1] The typical adult watches TV nearly four hours daily[1,2]; hence, it is not surprising that contemporary research indicates that human beliefs and practices are affected by television to a degree far exceeding earlier judgments.[1,3]

The role television plays in the development of health-related attitudes and behaviors is of growing interest to many.[3-6] Studies of the content of this powerful medium suggest that many health messages are conveyed regularly to viewers. Unfortunately, the information is sometimes unrealistic, distorted, and misleading,[7] particularly regarding food, nutrition, and obesity.[8-14]

Although many of the "micro-lessons" to which Americans are regularly exposed may promote misconceptions and produce unhealthy eating habits, television's primary offense may be one of omission rather than commission.[15] Research has shown repeatedly that the medium has profoundly altered American leisure.[1,16] When the TV is on, activity ceases and time for exercise is reduced significantly. The heart and other muscles of the body are not strengthened and calories are not expended in excess of resting metabolism during television viewing.

Recently, Tucker[17] examined the relation between television viewing and physical fitness. Results showed that as TV watching increased among 379 high school males, multiple measures of physical fitness decreased markedly and systematically. Similarly, Dietz and Gortmaker[18] showed that as TV viewing increased among several thousand children, obesity increased substantially.

The present study measured the extent of the association between TV viewing and obesity among adult males; an ancillary objective was to determine the extent to which age, cigarette smoking, physical fitness, time reported exercising, and hours worked per week mediate the relation between the television viewing and obesity.

Methods

Study subjects were 6,138 adult male employees of over 50 different companies that participated in the Health Examination Program offered by Health Advancement Services (HAS), Inc. Approximately 77 per cent of the subjects were married, 85 per cent were white, 51 per cent had some college education, and 32 per cent of the subjects were current smokers. The mean age

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was 39.5 (SD = 10.2) and the median and modal gross family income was $25,000–$30,000. Approximately 50 per cent of the subjects classified their jobs as professional or technical and 27 per cent as managerial/administrative.

All data were collected by registered nurses employed by HAS. Each subject was examined individually and privately for approximately 50 minutes after participating in a general orientation and completing an informed consent form. A written questionnaire was administered to assess demographic information, time spent watching television per day, number of cigarettes smoked per day, hours worked per week, and time spent exercising per week. Using a Hàrpenden skinfold caliper, subcutaneous fat was assessed at: *thigh* (anterior aspect midway between the hip and the knee-vertical fold), *chest* (half the distance between the anterior axillary line and the nipple-diagonal fold), *abdomen* (laterally at a distance of 2 centimeters from the umbilicus-vertical fold). The sum of the skinfold measurements along with age and gender were used to calculate the total body fat percentage of each subject. Physical fitness was assessed using a step test, the 3-minute Pulse Recovery Test.[19]

Obesity was treated categorically since body fat percentage poses little concern or risk until elevated levels signifying excessive fat are attained. Specifically, obesity was defined as 21 per cent to 30 per cent body fat[20]; males with 31 per cent or more body fat were considered super-obese. Television viewing and the control variables were categorized as shown in Table 1.

The relation of obesity and super-obesity to television viewing was measured by the odds ratio[21] with infrequent television viewers as the reference group. Mantel-Haenszel summary risk estimates were used to control for potential confounders. The relation of the control variables to television viewing and obesity was measured by the Mantel-Haenszel chi-square statistic.[22–24]

Results

As shown in Table 1, most subjects reported one to two hours of television viewing per day: more television viewing was reported by younger subjects, by the less fit, by smokers, by non-exercisers, and by subjects working fewer hours. Obesity or super-obesity, measured in nearly one-third of the subjects, varied markedly according to age, measured fitness, and reported exercise but not with smoking status or length of work week.

Table 2 shows the estimated relative risk of obesity by television viewing time without adjustment, with adjustment for all of the control variables identified in Table 1, and with adjustment only for measured fitness, the only actual confounder. After adjustment, subjects who viewed three hours of television or more each day showed twice the risk of obesity and even greater risk of super-obesity.

Discussion

The present findings indicate that duration of daily television viewing is strongly associated with obesity and super-obesity in adult males, as in children.[18] The associations could mean that: obesity causes increased television viewing; that obesity and television viewing are each caused by other common factors; or that increased television watching causes obesity.

By the first interpretation, men who are fat may be attracted to watching television as a primary source of recreation or entertainment, whereas non-obese men may prefer other pastimes, since most leisure activities require more physical exertion than television watching.

If the second interpretation is correct, the data suggest that the common correlate confounding the association is not age or length of work week. Smoking may confound among adolescents,[25] but it did not confound in this adult population.

The confounding effects of time reported exercising and physical fitness on the TV viewing/obesity relationship have not been studied previously; in these data, both were inversely related to television viewing and to obesity. Adjustment for time reported exercising (a subjective measure) reduced the relative risk estimates by only 4 per cent on the average, while adjustment for measured physical fitness reduced the estimates by 13 per cent for obesity and 28 per cent for super-

TABLE 1—Television Viewing Hours and Obesity, According to Control Variables

	Television Hours/Day (%)					Obesity (%)		
	N	<1	1–2	3–4	>4	Non-Obese	Obese	Super Obese
Total Group	6,138	9.5	61.0	25.3	4.2	69.0	28.3	2.7
Age (years)								
19–29	970	10.1	54.3	29.7	5.9	83.6	15.1	1.3
30–39	2,243	8.7	60.7	26.2	4.4	72.7	25.2	2.1
40–49	2,028	10.0	65.5	21.9	2.6	66.4	31.5	2.1
50–59	697	9.0	64.8	23.0	3.2	51.4	43.2	5.4
60+	200	6.0	64.8	24.5	4.7	47.6	43.3	9.1
Physical Fitness								
good	457	15.4	61.2	22.1	1.3	90.3	9.0	.7
average	2,927	9.8	61.6	23.7	4.9	75.1	23.6	1.3
poor	1,805	7.5	59.1	28.6	4.7	55.8	40.2	4.0
couldn't complete	142	6.0	53.0	31.6	9.4	41.9	50.8	7.3
did not participate	807	5.6	57.1	31.9	5.4	47.5	44.6	7.9
Smoking Status								
smoker	2,006	6.2	57.1	31.1	5.6	69.1	28.6	2.3
non-smoker	4,132	10.7	64.2	22.0	3.1	68.5	28.6	2.9
Exercise Status								
mild/non-exerciser	3,356	8.5	58.8	27.8	4.9	65.2	31.6	3.2
regular exerciser	2,782	10.3	65.3	21.5	2.9	75.2	23.0	1.8
Work Week								
40 hr or less/wk	2,041	7.9	56.7	29.4	6.0	70.5	26.8	2.7
41–50 hr/wk	3,157	9.0	64.0	24.1	2.9	69.3	28.2	2.5
51 hr+/wk	940	13.2	66.9	17.5	2.3	64.7	32.3	3.0

TABLE 2—Relative Risk of Obesity and Super-obesity by Television Viewing Group

Daily TV Viewing	Variable Controlled	Obese				Super-obese			
		N	%	RR_{mh}	95% CI	N	%	RR_{mh}	95% CI
<1 hour									
(*n* = 584)	none	110	18.8	1.0*	—	12	2.1	1.0*	—
1–2 hours									
(*n* = 3,744)	none	1051	28.1	1.69	1.36, 2.10	82	2.2	1.21	0.66, 2.23
	age, fitness, smoking, exercise & work			1.60	1.21, 2.11			1.08	0.51, 2.28
	physical fitness only			1.62	1.26, 2.08			1.06	0.55, 2.03
3–4 hours									
(*n* = 1,551)	none	488	31.5	2.05	1.62, 2.58	61	3.9	2.34	1.27, 4.32
	age, fitness, smoking, exercise & work			2.05	1.48, 2.84			2.33	1.18, 4.63
	physical fitness only			1.76	1.35, 2.30			1.73	0.90, 3.33
>4 hours									
(*n* = 259)	none	88	34.0	2.34	1.68, 3.25	13	5.0	3.17	1.47, 6.83
	age, fitness, smoking, exercise & work			1.90	1.06, 3.38			*—	—
	physical fitness only			1.87	1.29, 2.69			1.69	0.67, 4.29

NOTE: RR_{mh} = Mantel-Haenszel summary estimate of relative risk.
*Unable to calculate because of insufficient subjects in the frequent viewers/super-obese subgroup and the many strata of the control variables.

obesity. Nonetheless, television time and obesity were strongly related even after holding fitness constant.

If the third interpretation is correct, a possible mediator, unmeasured in the present study but equal in theoretical importance to time spent exercising and physical fitness, is caloric intake. Because television viewers are bombarded by thousands of messages for nonnutritious foods via advertisements and prime-time programs,[9,10,14] and because television viewing correlates with snacking and consumption of foods advertised on television,[7,26,27] it is possible frequent viewers consume significantly more calories than their counterparts, and hence are more obese.

Future research on the association of television viewing and obesity will need to consider this factor. In addition, because subjects in this study had relatively high SES (socioeconomic status), generalization to poorer groups will require additional research.

With the growth of cable television, home video recording, and videogames, television viewing is likely to increase in the coming years. The findings of this study and other recent research show that the impact of television on the lifestyles and health of Americans cannot be ignored.

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